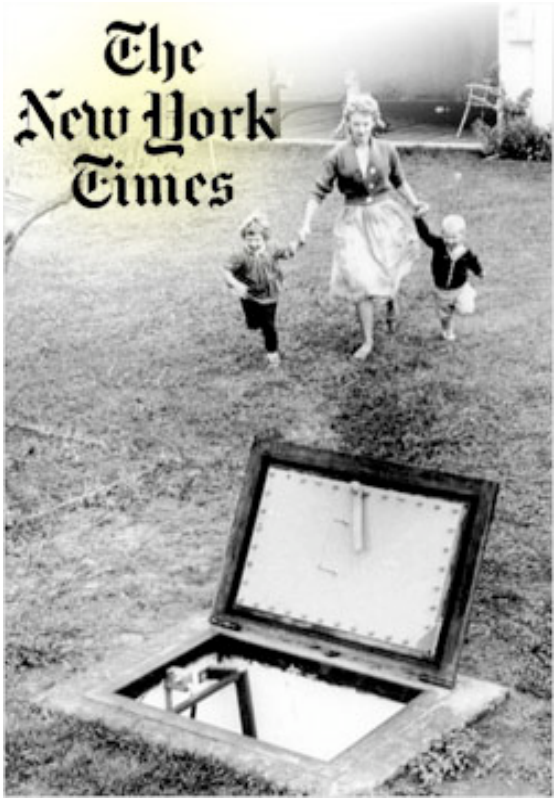
LAWRENCE LIVERMORE
REPORT

A weekly review of scientific and technological achievements from Lawrence Livermore National Laboratory, Dec. 13-17, 2010

Whatever you do, don't run



A mother and her children made a practice run for their $5,000 steel backyard fallout shelter in Sacramento, Calif. in 1961. Photo courtesy of Sal Veder/Associated Press.

If the unthinkable happened and terrorists struck a big city like New York with a nuclear bomb, what should people do?

Whatever you do, don't run. Instead get inside any stable building and don't come out until officials say it's safe, according to a recent scientific analyses.

An attack is much more survivable than most people think as long as you immediately shield yourself from the lethal radiation that follows a blast.

And that's what the Lab's Brooke Buddemeier has been preaching since he began working on a multi-agency modeling effort funded by the Department of Homeland Security. He looked at Washington, New York, Chicago, Los Angeles and other big cities, using computers to simulate details of both the urban landscape and terrorist bombs.

To read more, go to To read more, go to the Web.

You, too, can survive a nuclear attack

Computer-simulated fallout over Los Angeles is projected at Operation Golden Phoenix's command center.

Imagine a 10-kiloton nuclear device packing roughly the destructive force of the Hiroshima bomb detonating in Los Angeles. A blast of that magnitude could engulf 50,000 to 150,000 people and reduce parts of L.A., Hollywood and Studio City into radioactive rubble.

As long as residents stayed indoors and waited for news, not nearly as many people would die.

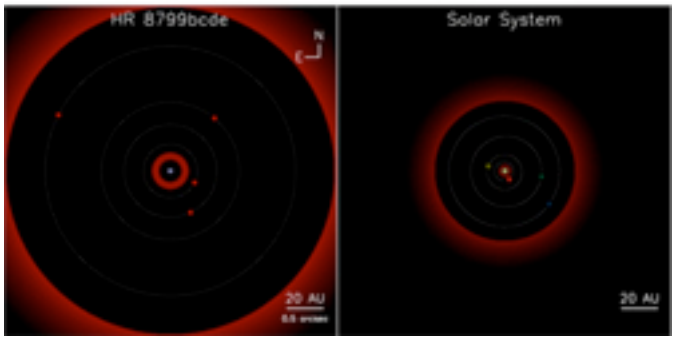
The good news is that the greatest danger passes in six to 24 hours as fallout's radioactivity dwindles, says LLNL health physicist Brooke Buddemeier.

Buddemeier led the study of nuclear blasts in the nation’s six target cities for the Department of Homeland Security. He drew on data from 1,000 Cold War nuclear tests and sketchy reconstructions of the impact of the a-bombs dropped Japan.

Buddemeier's mantra: Stay in, stay safe. Wait for instructions. He says “You can't outrun a fallout cloud and fatalities from fallout are 100 percent preventable.”

For more, go to the Web.

Now you see four planets



Schematic representation of the HR8799 system compared to our own solar system, showing the four HR8799 planets and Jupiter, Saturn, Uranus and Neptune in our solar system.

Astronomers have discovered a fourth giant planet, joining three others that, in 2008, were the subject of the first-ever pictures of a planetary system orbiting another star other than our sun.

The solar system, discovered by a team from Lawrence Livermore and the National Research Council of Canada (NRC) Herzberg Institute of Astrophysics with collaborators at University of California, Los Angeles and Lowell Observatory, orbits around a dusty young star named HR8799, which is 129 light years away. All four planets are roughly five to seven times the mass of Jupiter.

Now, the same research team has discovered a fourth planet that is about seven times the mass of Jupiter. Using high-contrast, near infrared adaptive optics on the Keck II telescope in Hawaii, the astronomers imaged the fourth planet (dubbed HR8799e) in 2009 and confirmed its existence and orbit in 2010.

To read more, go to the Web.

NNSA Administrator STARTs it up

The Washington Times

Tom D'Agostino

National Nuclear Security Administration's (NNSA) Administrator Tom D'Agostino recently opined about the need for the New START (Strategic Arms Reduction Treaty).

D'Agostino stressed the need to modernize the nation's nuclear deterrent and the resources required to get the job done. "All that is left is for Congress to vote this month to finish the job by approving New START and the president's investment in nuclear security.

"In doing so, it will have reversed years of neglect and decline in our nuclear establishment, and made the American people safer in the process."

D'Agostino goes on to say that for the first time since the end of the Cold War, there is a broad national consensus on the role nuclear weapons play in the nation's defense and what is required to maintain the deterrent.

When President Obama released his Nuclear Posture Review earlier this year, he outlined the need to move toward a smaller stockpile and made a commitment to modernize the remaining arsenal and the complex that supports it.

To read the complete editorial, go to the Web.

HOME run for local charities

Laboratory employees, along with the Lab's manager, Lawrence Livermore National Security, LLC (LLNS), have raised more than $3.4 million to give to surrounding communities.

Laboratory employees pledged more than $2.4 million to the HOME (Helping Others More Effectively) Campaign -- an annual charitable drive that benefits community/nonprofit agencies in the Tri Valley, San Joaquin Valley and Greater Bay Area. In addition, LLNS announced it would donate $1 million in matching funds.

The total employee contribution, $2,428,103, represents the largest amount ever raised in the 36 years of conducting the HOME Campaign.

Since 1997, the Lab's HOME Campaign has raised more than $1 million annually through donations that go directly to agencies selected by employees. Again this year, the LLNS Board of Governors announced LLNS would match the first $1 million raised in the campaign.

The funds for the match come from the fee LLNS receives to manage the Laboratory, not the Department of Energy funds for the Laboratory's operations.

***Livermore Lab Report* takes a break**

The *Livermore Lab Report* will not be published the week of Dec. 24 or the week of Dec. 31 in observance of the holidays. The report will return Jan. 7.

LLNL applies and advances science and technology to help ensure national security and global stability. Through multi-disciplinary research and development, with particular expertise in high-energy-density physics, laser science, high-performance computing and science/engineering at the nanometer/subpicosecond scale, LLNL

innovations improve security, meet energy and environmental needs and strengthen U.S. economic competitiveness. The Laboratory also partners with other research institutions, universities and industry to bring the full weight of the nation's science and technology community to bear on solving problems of national importance.

To send input to the *Livermore Lab Report*, send e-mail mailto:labreport@llnl.gov.

The *Livermore Lab Report* archive is available on the Web.